

IN THE CLAIMS:

Cancel claims 4-9, 12, and 21, without prejudice.

Amend claims 10, 11, 13, and 18 to read as follows:

10. A fan stage of a ducted fan gas turbine engine, comprising
a fan casing having an inner duct wall which in a fan rotor region is convergent in
the downstream direction; and
a fan rotor including a multiplicity of swept fan blades spaced apart around a hub
mounted concentrically with respect to the fan duct, each of said swept fan blades having a tip
profile which in revolution substantially corresponds to the convergent duct wall, a leading edge
of variable sweep angle which varies with increasing blade height or distance from the axis of
rotation, said sweep angle having a forward sweep angle in a first height region between the root
and a first intermediate radius, a rearward sweep angle in an intermediate height region between
the first intermediate radius and a second intermediate radius, a sweep angle in a third height
region between the second intermediate radius and the tip of the blade such that the third height
region is translated forward relative to the leading edge at the second intermediate radius, a
stagger angle which increases progressively with blade height.

11. A fan stage of a ducted fan gas turbine engine as claimed in claim 10
characterized in that the stagger angle increases to less than 90° at the tip relative to the airflow
direction.

A2
13. A fan stage of a ducted fan gas turbine engine as claimed in claim 11 wherein in a
blade tip region the sweep of the leading edge decreases.

RE
18. A fan stage of a ducted fan gas turbine engine that is at least in part
rotatable about an axis of rotation and defines a downstream direction along the axis of
rotation, comprising:

a fan casing that defines an inner duct wall having a fan rotor region, the inner
duct wall of the fan casing at the fan rotor region being convergent;
a hub disposed concentrically relative to the fan casing;
a fan rotor that includes multiple swept fan blades, the swept fan blades being
spaced apart around the hub, each of the multiple swept fan blades having:
a tip profile that substantially corresponds to the convergent inner duct wall of the
fan casing;
a leading edge that defines a variable sweep angle in a direction perpendicular to
the axis of rotation, the leading edge including:

an inner region adjacent the hub, the inner region defining a forward
sweep angle;
an intermediate region between the inner region and the fan casing, the
intermediate region defining a rearward sweep angle; and
an outer region between the intermediate region and the fan casing, the outer
region being translated forward relative to the leading edge at an outward boundary of the
intermediate region.

RECEIVED

JUL 23 2002

TECHNOLOGY CENTER R3700

Add new claim 23 shown below:

23. A fan stage of a ducted fan gas turbine engine that is at least in part
rotatable about an axis of rotation and defines a downstream direction along the axis of
rotation, comprising:

a fan casing that defines an inner duct wall having a fan rotor region, the inner
duct wall of the fan casing at the fan rotor region being convergent;
a hub disposed concentrically relative to the fan casing;
a fan rotor that includes multiple swept fan blades, the swept fan blades being
spaced apart around the hub and being capable of rotating at speeds providing supersonic
working medium gas velocities over the blades to cause a shock in the gas adjacent the
inner duct wall, each of the multiple swept fan blades having:

a tip profile that substantially corresponds to the convergent inner duct wall of the
fan casing;

a leading edge that defines a variable sweep angle in a direction perpendicular to
the axis of rotation, the leading edge including:

an inner region adjacent the hub, the inner region defining a forward
sweep angle;

an intermediate region between the inner region and the fan casing, the
intermediate region defining a rearward sweep angle; and

an outer region between the intermediate region and the fan casing, the outer
region being translated forward relative to the leading edge at an outward boundary of the
intermediate region to provide a sweep angle that causes the blade to intercept the shock.